

Indirect Aqueous Photolysis of Transfluthrin

Report: MRID 50119702. Hellpointner, E.. 1991. Experiments Concerning the Indirect Photodegradation of Benfluthrin in Aqueous Solution. Unpublished study performed, sponsored and submitted by Bayer AG, Leverkusen. Laboratory Study ID: 3467 HPO/046. Experiment start and end dates Sep. to Dec., 1990. Final report issued Feb. 19, 1991.

Document No.: MRID 50119702

Guideline: Non-guideline

Statements: The study was not conducted in accordance with USEPA GLP standards (p. 3). Signed and dated GLP and Data Confidentiality statements were provided (p. 2-3). No statements of Quality Assurance or Authenticity Certification were provided.

Classification: This study is classified as **Unacceptable**. The material balances and identity and quantity of transformation products were not reported. The details of the UV-irradiation and any dark controls were missing.

PC Code: 129140

First EPA He Zhong, Ph.D. Biologist. **Signature:**

Reviewer: EFED **Date:** June 07, 2017

Secondary EPA Greg Orrick, RAPL **Signature:**

Reviewer: EFED **Date:** June 07, 2017

Executive Summary

A non-guideline, indirect aqueous photolysis study for benfluthrin (*i.e.*, transfluthrin) was conducted using a merry-go-round irradiation apparatus. The study reported a direct photodegradation half-life of 26 hours ($k = 0.0268/\text{h}$) for 0.44 mg transfluthrin in water/acetonitrile 1:1 (v:v) in the merry-go-round apparatus. The study author attributed the degradation to indirect mechanisms in connection with high light intensity in the apparatus and claimed that “*a direct photodegradation is not to be expected in light of the UV-absorption properties of benfluthrin.*” Additional half-lives for indirect photodegradation were reported to be 4.3 hours ($k = 0.1609/\text{h}$) for 0.16 mg benfluthrin at 1-ppm humic acid/water solution, 11.6 hours ($k = 0.0599/\text{h}$) for 0.41 mg benfluthrin at 10-ppm-Na-nitrate in water/acetonitrile 1:1 (v:v), and 8.7 hours ($k = 0.0793/\text{h}$) for 0.45 mg benfluthrin at 50-ppm-Na-nitrate in water /acetonitrile 1:1 (v:v) in the same apparatus. This study is classified as **Unacceptable** because of the study deficiencies listed below.

Study Deficiencies and Reviewer's Comments

1. Material balances were not reported.
2. As a semi-volatile compound, the loss of transfluthrin as vapor in test cuvettes was not reported.
3. The identity and quantity of the transformation products were not reported.
4. Results for dark controls for the test solutions were not reported.
5. Sample replication was not reported.
6. The UV wavelength and intensity used for the irradiation were unclear.
7. The rotation interval for each cuvette during 7 hours UV irradiation was unclear.